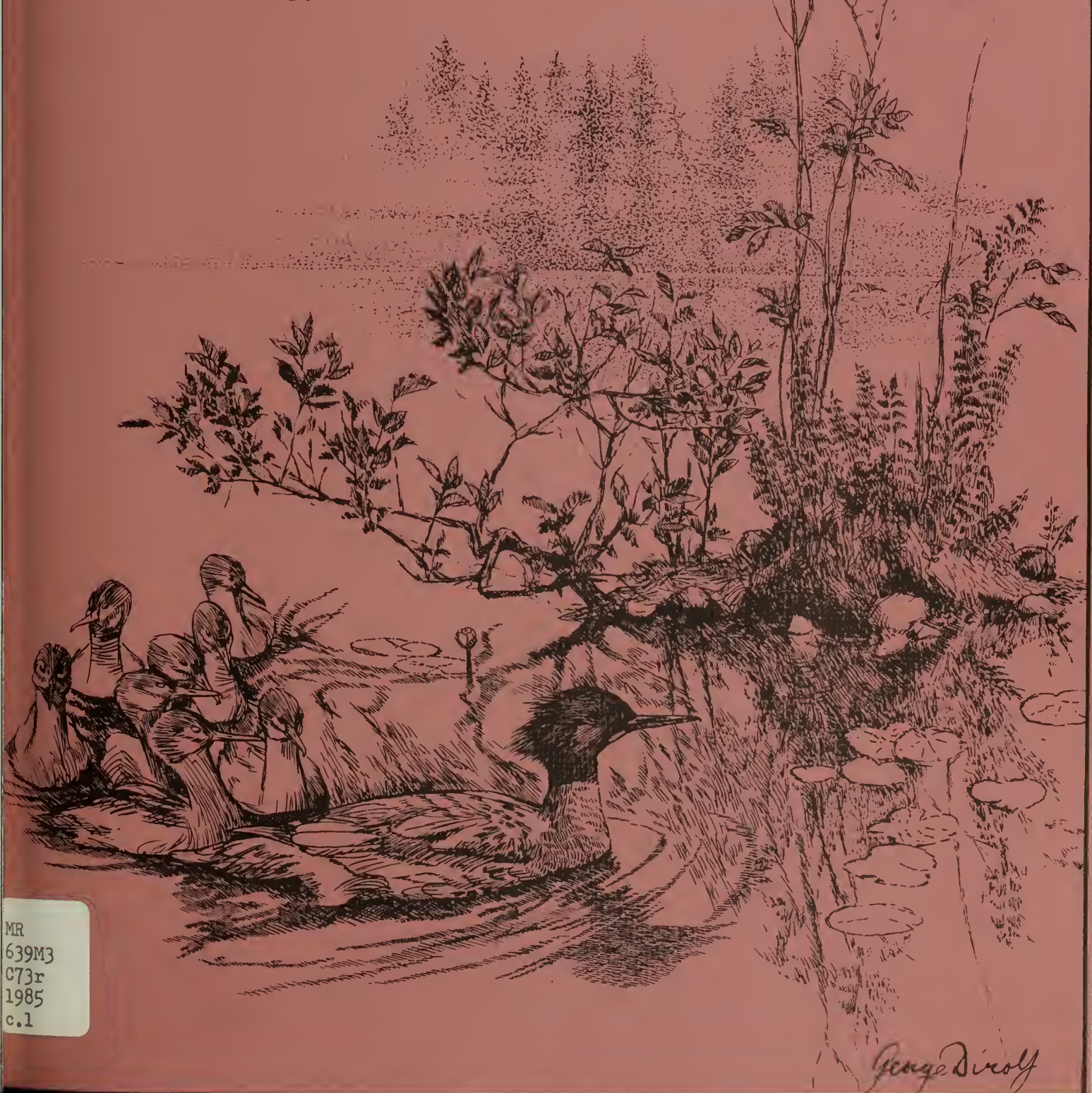




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1985

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*The Commonwealth of Massachusetts*  
*Division of Fisheries and Wildlife*  
*Leverett Saltonstall Building, Government Center*  
*100 Cambridge Street, Boston 02202*

DIRECTOR

His Excellency, Michael S. Dukakis, Governor of the Commonwealth, the  
Executive Council, the General Court, and the Board of the Division of  
Fisheries and Wildlife.

Sirs:

I have the honor to submit herewith the One Hundred and Twentieth Annual  
Report of the Division of Fisheries and Wildlife, covering the fiscal year  
1 July 1984 to 30 June 1985.

Respectfully submitted,

*Richard Cronin*  
Richard Cronin  
Director





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# The Board Reports

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George Darey  
Chairman

Throughout 1985, as in the past, the Fisheries and Wildlife Board melded public input with biological findings and recommendations to generate policies that benefit and perpetuate wildlife, streamline Division operations and, where possible, create programs to meet needs expressed by the public relating to wildlife. In this role, the Board held monthly meetings in locations around the state and held five (5) public hearings and informational meetings where and when needed.

These hearings dealt with such annually recurrent issues as the turkey season, establishment of waterfowl season dates, and a review of the antlerless deer hunting permit program. On these issues the Board voted to retain the turkey hunting season as it was during the previous year, continue the zoned waterfowl hunting season through a second year and add an additional 1,000 antlerless deer permits on the recommendation of staff biologists.

Early in the year, a press conference was held to announce that the Nongame Wildlife Fund had reached \$368,000.00 in contributions (the final total for the year proved to be \$380,000.00). The Board commended the Division for staff efforts on behalf of the fund as well as for their achievements in the many programs flourishing under the Nongame program. The Board's kudos to the Nongame program were echoed by the Governor who presented the program with one of the state's first "Pride in Performance" awards.

A wide variety of special issues occupied the Board's attention during the year, prime among them consideration of a proposal to reduce the number of game farms from three to two as an economy measure. Under a proposal formulated by the Division, it was demonstrated that the greatest savings would be realized by closing the Wilbraham Game Farm and increasing production at the remaining two farms to maintain production at the needed level. This proposal generated

considerable public comment and a variety of alternatives were considered. After careful review, it was decided to close the farm as recommended and relocate staff to other Division installations.

Another issue requiring public hearings and generating public comment came in the form of a proposal to regulate taking of Atlantic salmon from the Merrimack River. Based on information presented by Division staff, the Board considered passage of a regulation, promulgated as an emergency regulation in 1985, prohibiting salmon fishing downstream of the Essex Dam in Lawrence and limiting to one salmon the fishery between the Essex Dam and the Route 104 bridge on the Pemigewasset River.

Other issues which occupied the Board did not require public hearings. Among these was the continuing consideration a concern expressed by officials of Beverly relating to waterfowl hunting on the Danvers River in the area of Kernwood Bridge. The Board reviewed all public safety aspects and ultimately voted to advise hunters against shooting within 500 feet of a particular channel marker on the south side of Kernwood Country Club Point and to ban such hunting if Beverly would ban feeding and attracting of birds to the area -- a provision submitted for consideration in a town-wide referendum.

The Board also addressed the issue of a state proposal to relocate Route 2 in the Erving area. With a number of alternatives proposed by the state, and a recommendation from the Division to support improvements on the existing Route 2, the Board members reviewed all options and conducted field trips to the area in question. The Board opted to support the recommendation endorsing improvements to the existing roadway with an alternate position noting that the southern route as proposed would be an acceptable second choice.

During the January meeting, visitors gathered to observe the Board as the Trustees of Reservations presented a proposal to address the overpopulation of deer on their Crane Reservation property in Ipswich. The Board heard findings based on research by Dr. Aaron Moen of Cornell University and the Trustees' action recommendations based on those findings. In addition, the Board heard testimony of Division biologists and a statement from the Massachusetts Society for the Prevention of Cruelty to Animals. Following review of all of the submissions the Board voted to permit The Trustees of Reservations to embark on its herd reduction program as outlined in a memorandum of understanding between The Trustees of Reservations and the Fisheries and Wildlife Board.

Other Board actions included consideration of a possible license fee increase. Although Director Cronin noted that the Division was operating "in the black" and that no increase was needed, the Board approved such an increase should it become necessary. The Board also voted to dedicate the Sunpoke Lake Project, built by Ducks Unlimited with donations from Massachusetts, to the late Warren Blandin.

Certain other issues occupied the Board's attention prompting the Board to request information for future review from the Massachusetts Division of Fisheries and Wildlife staff. Items in this category were a proposed extension of the primitive firearms season, a review of the status of the Housatonic River relative to the presence of PCBs, a status report on beaver in the Commonwealth, a review

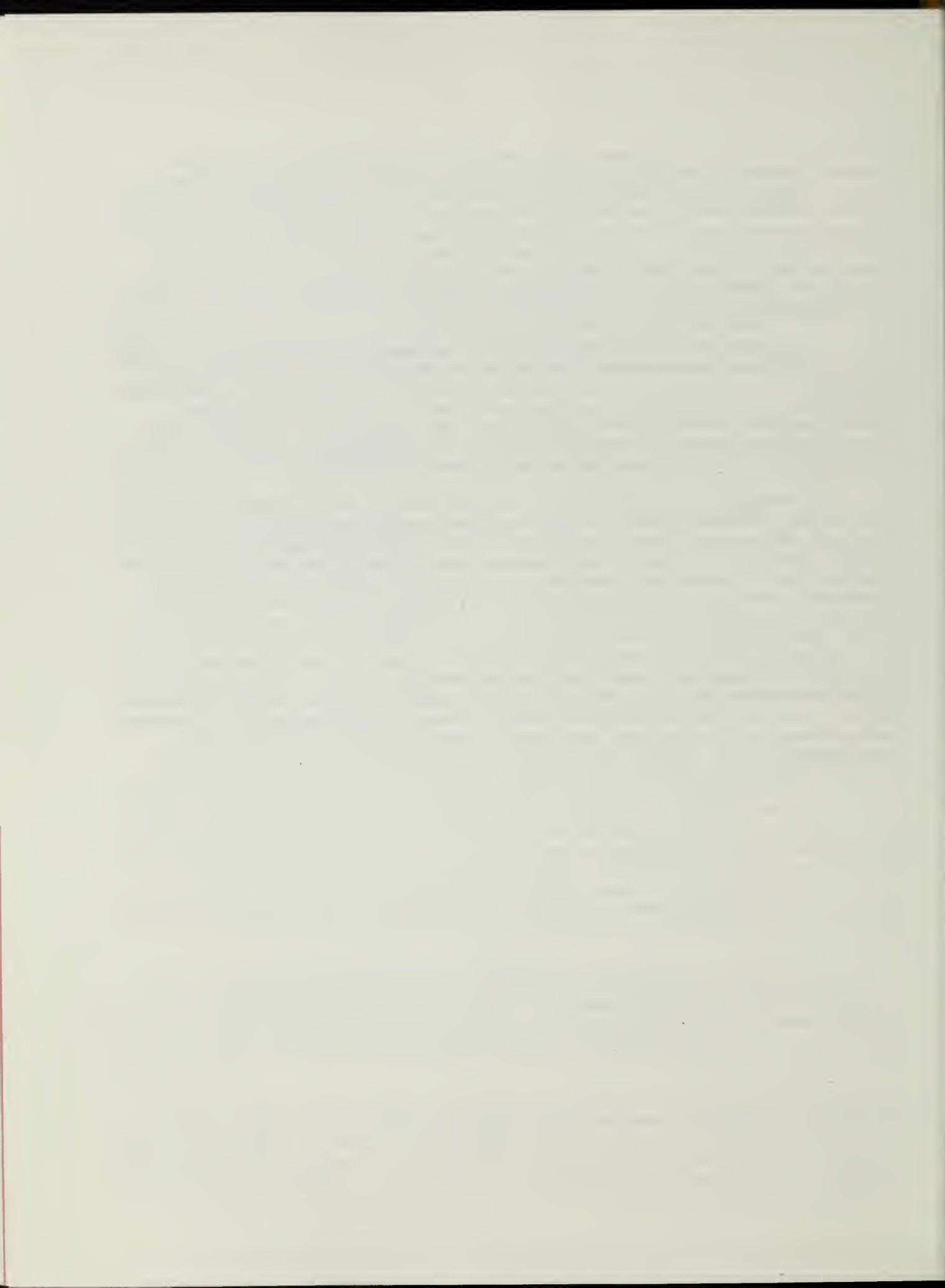


of Division publicity programs, and a review of the year-round open fishing season prompted by requests for restoration of the traditional opening day. Another issue which the Board chose to review was that of additional Catch and Release fishing areas. The Board also requested the wildlife section to investigate the possibility of a study of fawn mortality. While this could not be initiated immediately, the Board has been assured that such a study would begin during or about 1986. To bring Board members up to date on activities around the Commonwealth, District Managers presented an overview of activities and unique areas within their regions.

In examining members priorities for the upcoming year, the Board determined that one of their highest priorities was the establishment of Massachusetts Wildlife as a self-supporting publication. Legislative action will be required to implement this and to this end a proposal was included in the Division's budget request to establish a revolving fund for the magazine. Although that proposal was eliminated by the legislature, Director Richard Cronin has agreed to pursue the matter in hopes of having the fund reinstated.

Another high priority for the Board is improving forest management on lands held by the Division both for wildlife and for possible potential income. To this end, it was noted that it would be vital to obtain the services of a trained individual who would view forestry from a wildlife perspective. Within the year such a person was hired and forest wildlife specialist John Scanlon joined the staff and began surveying Wildlife Management Area boundaries in the Western District.

A source of satisfaction to both the Division and the Board was the completion, during this fiscal year, of the Division's policy document and of an initial five-year plan by the nongame section. This is the first Division policy since 1957 and the first nongame plan ever. Both documents were reviewed and approved by the Board and now serve as guidelines for Division program development.



# Fisheries

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Peter H. Oatis  
Assistant Director of Fisheries

## Survey and Inventory Investigations

### Streams

A total of 162 sites on previously unsurveyed streams were sampled and assessed for fisheries use and potential. Data collected from this study are being used in conjunction with historic information to generate an automated stream classification system that will aid fisheries managers and biologists in determining stocking rates, issuing recommendations or orders of conditions in response to future watershed development projects. Considerable time was also spent in assessing the impact of acidification on stream fisheries primarily within the Millers River Watershed. A cooperative effort with the U. S. Fish and Wildlife Service to evaluate acidified stream mitigation techniques was initiated.

### Lakes and Ponds

Fisheries biologists, fisheries managers and technicians completed field surveys at 18 lakes this year. Data have been analyzed and compiled in respective lake reports.

This information will be used in future planning and regulatory operations. Pond maps will be updated with access, depth and fisheries information for distribution to the public.

### Quabbin Reservoir Investigations

The annual creel survey indicates that an estimated 44,648 anglers fished 262,394 hours to catch 32,397 fish, primarily lake trout, smallmouth bass and landlocked salmon. Thirty-thousand, four hundred and eighty landlocked salmon yearlings were released into the reservoir. The landlocked salmon released in 1983 and 1984 provided the anglers with a harvest of over 1,500 legal salmon and approximately 14,000 sublegal salmon which were released. It is hoped that many of these fish will appear as legal fish in future years.

Recent sampling efforts throughout the watershed demonstrate that the effects of acidification are readily apparent. For example, mobilization of aluminum, mercury and vanadium since the early 1960's is apparent from sediment and tree core sample analysis. Caged rainbow trout failed to live more than a few days in known acid impacted tributaries and coves of the reservoir. Autopsies revealed that their deaths were due to low pH and high aluminum concentrations. Additional investigations ongoing at Quabbin include determining the effect of acidification on spawning success of smelt and lake trout.

The thirty-year water quality data-base for the Quabbin Reservoir and its main tributaries has been computerized and is presently undergoing analysis. Significant trends in alkalinity, pH, water level and fish production are being examined in an effort to better understand the existing impacts of acidification and to aid in the development of accurate models that will assist resource managers in developing strategies for countering the negative impacts of acid rain.

### Angler Characteristic Mail Survey

Approximately 2,000 survey questionnaires were mailed to anglers selected at random from across the state in proportion to license sales in their town.

To date, 534 responses have been returned. Data from this and future surveys will be used in planning, evaluation, economic and regulatory deliberations. Returns are presently being computerized for analysis which should be completed in the near future.

### Sea-Run Trout

This year biologists initiated a series of studies designed to evaluate spawning and survival of the wild sea run brook trout population in the Mashpee River. Broodstock collection of sea run brown trout (30 adults) was less than anticipated, however, the egg take (44,000) and survival were better than expected. Hopefully, this year class will provide approximately 20,000 yearlings when released in the spring of 1986. The fishery continues to provide excellent opportunities for those willing to spend the effort necessary to catch wild sea run browns.



### Acid Rain Investigations

Working in conjunction with the Massachusetts Water Resources Center of the University of Massachusetts, the initial screening of all streams and lakes within the Commonwealth has recently been completed. This information, which could not have been generated without the assistance of numerous individual volunteers and volunteer laboratory services, provides a complete set of base line data against which resource managers can assess changes in aquatic acidification or acid neutralizing capacity. Unfortunately, the data indicate that approximately 40% of our inland waters can be considered threatened by continuing acidification.

Other investigations conducted in cooperation with the Massachusetts Audubon Society and the Division of Water Pollution Control are being conducted at Great and Ryder Ponds in Truro in order to assess in greater detail the impacts associated with current liming practices designed to mitigate the effects of increased acidification. A great deal of staff time and effort are also directed at the preparation of a Generic Environmental Impact Assessment of the Division's Mitigative Pond Liming Program.

### Technical Assistance

Increasingly staff time is being spent providing technical assistance to other federal, state and municipal agencies concerned with the conservation of aquatic resources and wetlands. Regular participation with such agencies as the State Pesticide Board, Energy Facility Siting Council, Interbasin Transfer Commission, Corps of Engineers and DEQE is necessary if Massachusetts' inland fisheries are to be protected and enhanced.

Extensive fish sampling efforts were conducted in conjunction with the Division of Water Pollution Control at the Charles River, Assabet River, Blackstone River, Lower Connecticut Basin, Millers River, Nashua River, Hocomoco Pond and Lake Winthrop. Samples were analyzed for PCB's and such heavy metals as mercury and lead.

Staff members are also participating on a monthly basis with the Division of Water Resources as a member of the inter-basin transfer committee.

### Urban Angler

This unique program which is designed to introduce or re-introduce anybody to the enjoyment found in sport fishing through the training and instruction of dedicated volunteers is just beginning to bear fruit. This year we completed preparation of a training manual entitled Bluegill Basics that all instructors must study prior to conducting their series of angling clinics.

Program volunteers also assisted greatly in participating in a number of sportsmen's shows and special events that focussed public attention on the values of good sportsmanship and wise use of our aquatic resources.

## Anadromous Fish

### Connecticut River

The Holyoke fishway began operations on April 25, 1985 and shut down on July 15, 1985. Fishway activities were monitored by Massachusetts Cooperative Fisheries Research Unit personnel. Over 480,000 American shad, 630,000 blueback herring (a new season record), 285 Atlantic salmon (the second highest number trapped at Holyoke), 369 striped bass and 40,000 sea lamprey passed through the facility. A record number of salmon, 43, were observed in a single day. Approximately 6,400 shad were transported from the Holyoke facility to other New England restoration programs; New Hampshire, Rhode Island, Pennsylvania and other Massachusetts rivers. The fishway was operated in the fall in an attempt to capture additional salmon, but none was recovered. A total of 306 adult Atlantic salmon were recovered river wide this year. Most of these were held at Federal broodstock holding facilities.

The Turners Falls fishways were operated from mid-May to the end of June. This facility was also manned by the Massachusetts Cooperative Fisheries Research Unit personnel. The Gatehouse fishway passed 3,855 American shad, 301 blueback herring, three Atlantic salmon and 1,809 lampreys into the Turners Falls pool. The shad figure represents only approximately 10% of the total number of shad passed through the Cabot Station fishway (31,000) indicating a serious problem with fish passage in the canal system. Northeast Utilities has begun looking into this problem by conducting shad radio-telemetry studies in the canal. Northeast Utilities has also prepared a preliminary permit (to FERC) to construct an additional hydro wheel, Unit 7, at Cabot Station. The Massachusetts Division of Fisheries and Wildlife has been actively participating in the review of this project.

The Connecticut River Atlantic Salmon Commission prepared and adopted salmon fishing regulations for the mainstem of the river. These regulations are to be incorporated into the existing fishing regulations in each of the four basin states.

Division personnel also participated in bi-monthly Technical and Policy Committee meetings. We also were involved in several sub-committees directed at resolving specific questions related to the salmon and shad programs.

Over 320,000 Atlantic salmon smolts were released this past spring at five stocking locations located throughout the basin. This represents the second largest release in the history of the program. Over 40% of these were released in Massachusetts; 107,000 at Turners Falls, 17,300 in the Deerfield River and 17,300 in the Millers River. An additional 64,000 salmon fry were also released in the Bear and South Rivers of the Deerfield Basin. The Massachusetts Cooperative Fisheries Research Unit personnel assessed some of these rivers and found good survival and growth of salmon fry stocked in 1984 and 1985.

The U. S. Fish and Wildlife Service has begun negotiating with Northeast Utilities for land to construct a research laboratory in the vicinity of Cabot

Woods, Turners Falls. This facility will allow students and research biologists to conduct studies relating to fish passage, anadromous fish and riverine ecology.

#### Merrimack River

The Lawrence fishway began operations on May 1, 1985 and closed down on July 22, 1985. This facility was operated by the Massachusetts Division of Fisheries and Wildlife and the Massachusetts Marine Fisheries. During this time, we observed over 13,000 American shad, 202 Atlantic salmon, 23,000 herring, 18,000 sea lamprey and 110 striped bass.

New Hampshire Fish and Game transported 980 adult shad from the Holyoke trapping facility to the Merrimack River. They were released in the Concord, New Hampshire area. The New Hampshire Fish and Game also transported 110 adult shad from the Lawrence trapping facility to the Nashua River. There should be fish passage at the two lower most barriers on the Nashua in the very near future so it is important to begin restoring American shad to this river. The State of Maine also transported shad from the Lawrence fishway. They released approximately 150-200 fish to their Androscoggin River.

Most of the 212 returning adult salmon were transported to the Nashua National Fish Hatchery in New Hampshire. Thirty-six of these were released into the Pemigewasset River, (New Hampshire) because of potential disease problems. Some of these were fitted with radio tags to allow U. S. Fish and Wildlife Service biologists to monitor their movements.

Scale analysis of the 212 salmon indicated that 43% were a result of the fry stocking program and the remaining 57% resulted from smolt stockings. The sex ratio was 63% females and 37% males, 92% of the fish were 2-sea-winter fish 2% were 3-sea-winter fish and 6% were grilse.

Eggs taken from the recovered broodstock brought in 458,000 for next year's programs.

Over 158,000 smolts, 16,000 parr and 148,000 fry were released throughout the basin.

A creel census was conducted below the Essex Dam to monitor the shad sport fishery. While the data have yet to be analyzed, it appears that the sport fishery was almost equal to that noted in previous years (4,000 anglers, 9,900 hours of recreation catching 6,000 fish). Incidental catch is estimated at 12-15 Atlantic salmon.

The project leader attended several North Atlantic Salmon Conservation Organization Research Committee meetings. The Division was charged with preparing a salmon tagging program to evaluate high-seas interception of U. S. salmon. This proposal was given to the North Atlantic Salmon Conservation Organization Commissioners and was reviewed by the various working groups.



Proposed Sewalls Falls hydro project: The Division became an intervener of this project because of its potentially detrimental effects on the salmon and shad restoration program.

Fish passage at Lowell is near completion. It should be ready for field testing and operations in 1986. The power plant at this facility has been in operation for most of 1985. It will probably take a few years to obtain optimum performance from this complex fish passage facility.

The Policy and Technical Committees have begun negotiations with Public Service of New Hampshire with regard to upstream and downstream fish passage, and minimum flows at Amoskeag, Hookset, Garvins Falls, Eastman Falls and Ayers Island, the next five barriers to fish passage on the Merrimack.

Both the Connecticut and Merrimack Rivers were closed to Atlantic salmon fishing in 1985.

### Fisheries Development

#### Large Esocids

Significant improvements in the culture of large esocids, tiger muskie and northern pike were made at the Roger Reed Hatchery. New fiberglass rearing tanks were installed and removed from the fence area in an attempt to keep the program safe from the vandalism that we have experienced in recent years. Approximately 10,000 yearling tiger muskie are scheduled to be released this spring. The Division also received about 10,000 northern pike fry from the state of Rhode Island. These fish will be reared through the yearling stage at Reed Hatchery. Pike produced from this system will be used to stabilize those fisheries initiated with pike purchased through a private dealer from Minnesota. This latter source of pike while producing excellent fish is unreliable because of the dependence upon natural production. This year, we were able to purchase 12,000 yearlings from Minnesota. These fish were released only into waters which had received shipments of pike from this source in the past.

#### Walleye

Attempts to establish a spawning population of walleye in Assawompsett Pond via the release of fry reared at the Attleboro National Fish Hatchery appear to be at least partially successful. During this spring, two pound nets were fished from February 28, to April 2, 1985. A total of 124 walleye were caught and tagged. Seventeen of these fish were females. A few walleyes were reported, by reliable anglers, as caught from the Nemasket and Taunton river systems. If the population of mature walleye continues to show evidence of growth in subsequent years, a portion of their eggs will be used as stock for release into other waters deemed capable of supporting a walleye fisheries.



# Fish Hatcheries

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David Fredenburgh  
Chief Fish Culturist

During the 1985 fiscal year, the hatcheries produced 1,087,600 fish weighing 455,893 pounds. Of that number, 448,000 were classified as 9"+ and over 150,000 were in the 12+ category.

Normal maintenance was carried out at all the hatcheries.

The pollution control project was completed at the McLaughlin Hatchery. The project was bid at \$545,000. Because the project was not completed on time, the contractor was charged for completion damages of \$18,000.00.

Plans were finally formulated to re-build the Sunderland Hatchery. The other four facilities have had some degree of upgrading in the past years and are in relatively good condition. Sunderland is the last hatchery to receive an upgrading. The plans are to consolidate the rearing facility beside the entrance to the driveway. The present area will be filled in with gravel and above ground fiberglass tank will be utilized. A new gravel-pack well and water system well will be constructed. This project will be completed in segments as the money is appropriated. Anticipated completion date is 1989.

At Sandwich a new well was completed that will help augment the existing ground water supply.





# Wildlife

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Wayne F. MacCallum  
Assistant Director of Wildlife

The Wildlife Research Section is responsible for the management of the approximately 75 species of birds, mammals, reptiles and amphibians which are traditionally hunted or trapped. Principal activities of the section include monitoring of population levels and annual harvest, development of recommendations concerning regulations and policy relative to the Commonwealth's wildlife resources, planning and implementation of habitat management programs, development of Division funded University of Massachusetts Cooperative Wildlife Research Unit studies, technical assistance to other agencies and private citizens experiencing problems caused by wildlife, development and implementation of wildlife research programs qualifying for federal grants. Summaries of current programs follow.

## WATERFOWL

### Preseason Banding

A total of 1,049 ducks were banded during the 1984 preseason period; 567 wood ducks, 249 mallards, 69 black ducks, 9 mallard X black hybrids, 43 bluewinged teal and 119 greenwinged teal. A new airboat came into use in late August, the old boat having been given to the U. S. Fish and Wildlife Service. The new boat has a 260hp Lycoming engine, providing considerably more power than the old boat. The additional power and flat bottomed hull construction allow operation in shallower water than the old boat and a special polymer shield on the bottom is puncture resistant reducing "down time" for hull repair.

### Mid-Winter Waterfowl Survey

A total of 246,511 waterfowl were counted during the January 1985 winter inventory, the second highest count in more than 20 years due to a seaduck count of 166,658, of which 132,073 were eiders. Black ducks (23,091) were up 13% over both last year's count and the previous 10 year average. Mergansers were also at a record high with a count of 20,630, 180% above the 10 year average. Scaup were up over last year but below the 10 year average and most other ducks were down from last year. Canada geese were up 10% over last year, but 5% below the 10 year average.

### Winter Banding

Division personnel and cooperators banded 806 black ducks, 147 mallards X black hybrids, 21 mallards, and 16 pintail. These along with 570 black ducks banded by Parker River National Wildlife Refuge allowed the state to meet its quota of 600 female and 400 male black ducks.

### Wood Duck Nest Structure Study

Four wood duck and one hooded merganser used plastic buckets on 13 study areas while six wood ducks and two mergansers nested in wooden boxes in 1984. This was the first use of plastic buckets on these areas. Usage on 15 established areas ran 43% for 46 buckets and 57% for 170 boxes. Success rate was 50% in buckets and 78% in boxes. In 1985, five wood ducks used buckets on the new areas while six wood ducks and two mergansers nested in wood boxes. Usage on the 15 established areas ran 41% for 46 buckets and 59% for 169 boxes. Success rates were 63% in buckets and 91% in boxes.

### Biological Tagging of Wood Ducks

The project leader volunteered to assist Jim Thul of the Florida Game and Freshwater Fish Commission in examining blood smears for parasites. Thul sent up 150 smears collected in Virginia in October. The project leader accomplished the task and reported the findings to Thul for inclusion in analysis of southeastern states data.

### Wood Duck Production Study

During the 1984 nesting season, 195 nest starts were recorded in 522 available structures on 50 areas across the state. There were 130 successful wood duck hatches and six hooded merganser hatches. A week of rain in late May 1984 led to extensive flooding and a loss of a number of clutches during the peak week of hatching. In 1985, 195 nest starts were recorded in 532 available structures. There were 130 successful wood duck hatches and six merganser hatches. This was the most successful season in seven years.

### Park Waterfowl Project

A paper "The Role of Parks in the Range Expansion of the Mallard in the Northeast" was presented at: Waterfowl in Winter, a symposium and workshop held in Galveston, Texas 7-10 January 1985 and at the winter technical section meeting of the Atlantic Waterfowl Council in Savannah, Georgia 19-22 February 1985.



### Canada Goose Parts Collection Survey

Measurements were taken from 113 geese killed by hunters from various parts of the state and from 24 geese found dead of lead poisoning on the Parker River National Wildlife Refuge during the 1984-85 hunting season. These data were added to the 247 measurements made in 1983 and are currently on file with the Massachusetts Division of Fisheries and Wildlife.

Measurements were also taken from 45 adult geese drive-trapped by Parker River National Wildlife Refuge personnel in Newbury during July 1984 to get some baseline data on breeding resident geese in northeastern Massachusetts. In addition, 15 adult geese were measured during a trap and transplant program conducted at the Worcester Science Center.

### Experimental Waterfowl Season Appraisal

The 1983-84 season was the first year Massachusetts was divided into three zones. Waterfowl harvest was down 5% from the 1981-83 seasons when the state was divided into two zones and down 30% from the pre-zoning years of 1978-1980. Major decreases in harvest were recorded for wood ducks and black ducks. Special black duck harvest restrictions were imposed along with zoning in 1983-84 and resulted in a 27% decline in the black duck harvest.

### MOURNING DOVE

The total number of calling doves on three long-term standardized routes increased 25% during 1984-85. The total of counts on all 18 routes decreased 6% (200 to 187) from 1984-85.

### TURKEY

The sixth Massachusetts spring gobbler hunt was held in May 1985 in all counties and portions of counties west of the Connecticut River. The season was extended to three weeks, consisting of a one-week first period and a two-week second period. Sportsmen were allowed to apply for and hunt during only one of the two periods. A total of 3,800 permits were allotted for each hunt period, of which 3,468 were issued for the first period and 2,250 for the second period. A record kill of 309 turkeys (226 first period, 83 second period) was attained with an overall participation rate of 88.4% (5,072) and a hunter success rate of 6.1%. The Berkshire County kill was 213 (69%); Franklin County, 39 (13%); Hampden County, 34 (11%); and Hampshire County, 23 (7%). Adult males (200) comprised 65% of the kill.

Winter weather conditions again hampered trap-and-transplant. Only 7 turkeys (1 IF, 4 IM, 2 AM) were captured for a mean capture rate of 0.13 birds per trap hour and a mean capture success of 44%. This is the poorest capture rate and success rate since 1980, when no birds were captured. The six males were transferred to Middleboro, Plymouth County. The single hen was released at the capture site.

## WOODCOCK

The Fisheries and Wildlife Board continued the two bird daily limit on woodcock which had been in force since 1982. Although woodcock have made a good recovery, the census indicated that levels were still below the long-term average.

Daily hunting success improved slightly during the 1984 season but fewer hunting trips per hunter slightly decreased the total bag of birds.

The 1985 spring census of woodcock showed that populations have improved for the second year in a row. The spring was warm and dry through the peak of hatching and production was anticipated to be excellent. The Division recommended to the Board that the daily limit of woodcock be liberalized to three birds.

## BEAVER

The 1984-85 beaver season was changed to run from 15 November to 28 February statewide, with no Conibear-type traps larger than size #110 or equivalent allowed after 15 January. During this season, a total of 1,052 beaver were taken by 95 trappers in 101 towns, for a mean take of 11.1 beaver per successful trapper. This take represents an increase of 521 beaver (98.1%) over 1983-84. Increases occurred in all counties and regions, but were most pronounced in Essex (+ 766.7%), Hampden (+ 170.6%), and Worcester (+ 166.9%) counties and the Eastern region (+ 153.7%). The harvest in the Eastern region (713 beaver, 67.8%) is the greatest on record. Pelt prices increased to an average of \$18.26, but continue to be below the ten-year average.

## OTTER AND FISHER

During the 1984-85 otter season, 68 successful trappers took 142 otter in 70 towns in ten counties for an average of 2.1 otter per successful trapper. This compares with a harvest of 119 and an average of 2.0 in 1982-84.

The fisher take increased from 124 in 1983 to 140 in 1984, with 58 successful trappers taking an average of 2.4 fisher each among 54 towns in seven counties (57 trappers averaging 2.2 in 1983).

Worcester (80), Franklin (16), and Essex (15) counties and deer management zones 03 (39), 04 (35), and 02 (27) yielded the most otter, while Worcester (75), Essex (25), and Franklin (21) produced the most fisher.

A total of 130 otter and 138 fisher carcasses were collected. The mean age of otter in 1984-85 was 2.17 and of fisher 1.55. This compares with 1.97 for otter and 1.62 for fisher in 1983-84. Ten of 12 otter aged 2.5 and older and 14 of 15 fisher aged 1.5 and older showed evidence of reproductive activity. Average corpora lutea counts were 2.5 for otter and 3.0 for fisher in 1984-85, as compared to 2.5 and 3.1 respectively in 1983-84.

## BOBCAT

A total of 36 bobcat were taken in 1984-85, including 13 by hunting, 21 by trapping, and two road kills. The mean take per successful hunter (N=11) and

successful trapper (N=17) was 1.2 each. Bobcats were trapped most frequently in November (18, 85.7%) and shot in January (5, 41.7%). In 1984-85, bobcats were taken in 26 towns in five counties. Juveniles (0.5 age class) comprised 16.7% of the take, with an average placental scar count of 2.4 scars/animal with countable tract. The average pelt price was \$56.22.

#### COYOTE

A total of 42 coyotes were taken by 29 sportsmen in 29 towns and six counties during the 1984-85 hunting season. Over one-half (52.4%) of the kill was in November, with the same number and percentage hunting specifically for coyote. Immature coyotes comprised about two-thirds (65.7%) of the kill. Fifteen additional mortalities, principally road kills, were tallied during 1984-85.

#### FUR HARVEST

The value of the Massachusetts fur harvest increased 34% from the previous year.

#### BLACK BEAR

A total of 878 bear hunting permits were issued for the 1984 bear hunting season. A record number of 17 bear were taken, including 16 in the first period and one in the second period. Eight males and nine females were taken in Berkshire (6), Franklin (6), Hampshire (4), and Hampden (1) counties. Six non-hunting mortalities were recorded including two illegal kills, one nuisance kill, one road kill, one found dead, and one euthanized. Three nuisance complaints (2 involving bees) were received.

#### COOPERATIVE WILDLIFE RESEARCH UNIT STUDIES

##### Wild Turkey Population Dynamics

Major flock dispersals occurred during the first three weeks of April. Hens moved an average of 5.42 km from center of their winter range to their nesting area.

Seventeen of 20 monitored hens (85%) are known to have attempted nesting. Ten of 17 (59%) initiated incubation during last week of April and first two weeks of May. Six of 17 first nesting attempts (36%) were successful. Average clutch size was 12.6 (N=5). Average brood size was 11.2 (N=5). As of 20 June, one of six unsuccessful hens (17%) had attempted re-nesting.

Ten birds died during the report period. Five hens (4 immature, 1 mature) were lost through predation. One hen (immature) succumbed to a fungus infection of the crop. Two hens (immature) are believed to have died as a result of handling, and 2 hens (1 immature, 1 mature) died of unknown causes.

##### Black Bear Sow Cub Interactions and Reproductive Success

Seven adult females that were potential cub producers in 1985 were followed intensively on foot from early September through denning to construct a profile



of each female's major fall food sources. Evidence of feeding activity was collected about every three days on each female, and samples of food items were analyzed for protein, fat and fiber. One female died in mid-September and another disappeared in late October 1984. The remaining five were followed through denning.

Between 5 February and 13 February, dens of the five remaining single, adult females were visited. Females were weighed, measured and milk and blood samples were drawn. New cubs were counted, sexed, weighed, and marked with small temporary ear tags. Four of five sows produced 12 cubs (4:3:3:2). Dens were visited again in the last week of March. Females and cubs were weighed again and milk and blood samples were drawn from the sow. Cubs were fitted with small, expandable radio collars that were designed to break off in about 2-3 months. This will help to determine causes of mortality to young cubs.

Families have been followed intensively since emergence to compile a spring food profile and to determine how the sow's spring nutritional state may affect cub survival until weaning.

Milk and blood samples are being analyzed to try and correlate chemistry parameters with nutritional condition of the sow.

#### Ecology and Status of the Bobcat in Western Massachusetts

A radiotelemetry study of bobcat (*Felis rufus*) ecology was initiated to determine the status of this important furbearer in western Massachusetts. This study has now been completed. Home range, movement, activity, habitat use and social structure data were collected on 16 radio-tagged bobcats during 1982-85. Male home ranges averaged 116.8 Km<sup>2</sup> (SD=41.2, N=8) while female home ranges averaged 77.5 Km<sup>2</sup> (SD=68.9, N=6). These were similar to home ranges reported for bobcats in other northeastern states. Bobcat movement was variable between seasons and sexes. Mean daily movement was  $2.34 \pm 2.22$  Km for males and  $1.88 \pm 1.50$  Km for females. Greatest daily movement was during summer and fall. Mean hourly travel distances was  $404 \pm 440$  m. Activity data varied seasonally with bobcats most active during all hours of the day in summer and fall and primarily nocturnal in winter. Preferred habitat types were regenerating forest, small hardwoods and other early successional stages. Cottontail rabbits (*Sylvilagus* sp.) were most frequently hunted by bobcats and were the predominant prey species observed in food habits analysis of digestive tracts and scats. The sex ratio of harvested bobcats was 1.04 males per female. Ages of harvested bobcats were typical of a healthy population with 23% juveniles and 19% yearlings. Reproductive tracts of female bobcats indicate low reproductive rates by first year of implantation and percent of females with placental scars. Of six radio-collared females monitored through the reproductive season, only one had kittens. Six radio-collared bobcats died from natural causes; two bobcats were killed by predators and pneumonia, gastric enteritis, a motor vehicle, and old age/starvation killed one each. Social structure as exhibited by home range distribution appeared variable. Extensive excursions by adult bobcats were observed during breeding and fall seasons. Indirect evidence suggests a lack of territoriality among bobcats in western Massachusetts. Large home ranges with extensive overlap, disjunct home ranges, seasonal excursions, and seasonal shifts in home ranges indicate a certain degree



of nomadic behavior. The low incidence of scent-marking behavior observed from snow-tracking data also suggests a lack of territorial behavior in this population of bobcats.

#### DEER

The 1984 statewide deer harvest for all seasons combined was 4,477 deer. This total closely followed the increasing harvest trend started in 1967 when the antlerless permit system was established. The four western counties of Berkshire, Franklin, Hampshire and Hampden accounted for 72% (3,216 deer) of the reported harvest. Worcester County recorded 499 deer killed (11% of the total harvest). Essex, Middlesex, Norfolk, Bristol, Plymouth, and Barnstable Counties reported 403 deer killed (9%). The islands of Dukes and Nantucket Counties contributed 200 (4%) and 159 (3%) deer to the total harvest respectively.

Shotgun season hunters harvested 3,650 deer (82% of total harvest), including 2,203 antlered and 1,447 antlerless deer (defined as deer having no antlers or having antlers less than 3" in length). Archers harvested 470 deer (251 antlered, 219 antlerless) and primitive firearm hunters killed 346 deer (78 antlered, 268 antlerless). Paraplegic hunters took two antlered and nine antlerless deer during their special season.

Approximately 38,400 valid antlerless deer permit applications were received prior to the public drawing in October. Permits were allocated to 8,150 sportsmen and 424 farmer/landowners. The odds of a permit holder harvesting an antlerless deer during the shotgun season were about 1 out of 6.

Natural Resource Officers reported 408 non-hunting deer mortalities during the 1984 calendar year. Deer killed by motor vehicles accounted for 80% of the reports, dog kills (10%), and other causes (10%).

#### FALCONRY

During 1984 there were 32 active falconers. Five of the falconers had breeding permits and 29 Raptor Salvage permits were issued. The salvage permittees treated a total of 229 raptors; of these 97 (42%) were released back to the wild.

#### MAST PROJECT

The mast project was designed to provide a record of mast production from year to year on both a statewide and regional basis and to compare records of mast production with game harvest data. This project was discontinued after a five year trial because the data gathered provided inconclusive measurements concerning regional mast production.

#### FOREST MANAGEMENT PROGRAM

The Division's forestry inventory was initiated in May, 1985. In cooperation with the University of Massachusetts Department of Forestry and

Wildlife, and the Massachusetts Cooperative Wildlife Research Unit, the Division hired two undergraduate students (one forestry major and one wildlife major) to conduct field surveys from 1 June through 31 August 1985. Field work began on the Savoy Wildlife Management Area in the Western District, and involved the establishment of inventory sample plots on a grid system throughout the management area. Data from 71 sample plots yielded information on: (1) the volume and variety of existing forest products (timber and firewood), (2) the abundance of woody and herbaceous vegetation on the forest floor (which relates directly to wildlife habitat quality), and (3) the specific location of various forest stands. Arrangements were made for the inventory data to be analyzed through an existing computer program under the direction of UMass Forestry Professor Joe Mawson. In addition to these data, boundary lines for the management area were determined and marked in the field.

The forestry management program will concentrate on management areas in the Western District first, then into the Connecticut Valley and Central Districts where each wildlife management area will be evaluated.

#### STATEWIDE DEVELOPMENT

The Statewide Development Project is charged with the operation of Wildlife Management Areas and the construction and maintenance of nesting structures.

Wildlife management area operations include habitat management, as well as public access work and area administration, such as planning and management of controlled hunts.

Nesting structure work includes the statewide erection and maintenance of wood duck nesting boxes, osprey nesting platforms, and bluebird nest boxes. Loon nesting rafts are also constructed and maintained on Quabbin Reservoir. Below is a summary of activities during Fiscal Year 1985:

1. Buildings: Maintained 15 buildings on 11 areas.
2. Dams: Maintained 7 dams on 4 areas.
3. Bridges: Constructed 3 foot bridges on 3 areas and maintained 8 bridges on 5 areas.
4. Roads and Trails: Constructed 3.8 miles of trails on 2 areas and maintained 119.3 miles of roads and trails on 15 areas.
5. Parking Lots: One lot was constructed and 95 lots were maintained on 21 areas.
6. Waterfowl Blinds: Waterfowl blinds (15) were maintained on 2 areas.
7. Signs and Boundary Markers: Erected 991 signs on 7 areas and marked 1.0 miles of boundary. Maintained 1,559 signs on 38 areas and checked 107 miles of boundaries on 30 areas.
8. Tree and Shrub Planting: Planted 1,160 shrubs and 415 trees on 5 areas.
9. Herbaceous Seedings: Planted and top-dressed 147 acres on 8 areas and oversaw cooperating farming of 803 acres on 9 areas.
10. Clearing: Four acres were cleared on 2 areas.
11. Vegetation Control: Unwanted brush was controlled with a tractor drawn brush cutter, by handcutting, and with herbicides. A total of 315 acres on 13 areas were cut and 88 acres on 2 areas were treated with herbicide.
12. Timber Management: Selective cuts were made on 13 acres in 3 areas.

13. Nesting Structures: Erected 177 wood duck boxes, 220 bluebird nest boxes, 7 osprey nesting platforms, and 5 loon nesting rafts. Maintained and checked 941 wood duck nest boxes.
14. Water Level Management: Manipulated water levels to encourage emergent vegetation over 163 acres on 2 areas.
15. Managed Public Hunts: Managed hunts were held on 4 areas.
16. Prune and Release Trees: Pruned and eliminated vegetative competition from around 368 fruit-bearing trees and shrubs.
17. Gates: Constructed 2 gates on 2 areas and maintained 23 gates on 6 areas.

Additional time was spent in administering the project, inspecting areas, and maintaining equipment used on the project.





## Game Farms

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E. Michael Pollack  
Chief Game Biologist

On December 14, 1984, the Fish and Wildlife Board, upon recommendations of the Director, voted to close the Wilbraham Game Farm in order to reduce the cost of the game farm program. Consolidation into a two game farm system has resulted in substantial labor savings.

The Ayer and Sandwich Game Farms are now geared to produce the annual scheduled production of 44,000 pheasants and approximately 3,500 bobwhite quail. Upon closure of the Wilbraham Game Farm, all propagation supplies, materials, and equipment were transferred to the remaining two farms.

Continuous efforts are being made to reduce both feed and labor costs. Four new bulk feeders were purchased. The purchase of pheasant feed in bulk reduces feed costs considerably.

New pheasant pens were constructed at the Ayer Game Farm allowing the rearing of 5,000 or more pheasants. Other pens will be constructed in the coming year. Upon completion of these projects, the Ayer farm may be capable of distribution to all districts except the Southeast.

During this reporting period, the Sandwich Game Farm experienced an outbreak of Fowl Cholera. The end result required the Division to acquire (at no cost) pheasant eggs from New York, Pennsylvania and New Jersey state game farms.

## Pheasant Production

1984

<u>Farm</u>	<u>A</u>	<u>SR</u>	<u>B</u>	<u>C</u>	<u>PG</u>	<u>Total</u>
Sandwich		120	1,164	2,140	6,236	9,660
Ayer	48	1,735	1,528	4,328	12,336	19,975
Wilbraham	—	<u>2,420</u>	<u>2,912</u>	<u>9,528</u>	<u>5,948</u>	<u>20,808</u>
Totals	48	4,275	5,600	15,996	23,520	50,443

Quail Production: 3,600

White Hare Purchased: 800



## Nongame and Endangered Species

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Bradford G. Blodget  
State Ornithologist

This was a milestone year for the Nongame and Endangered Species Program. Fiscal 1985 was the first year that funds were made available from the Nongame Wildlife Fund Checkoff on the State Income Tax Form. The approved budget of \$297,436.00 was a significant increase over the \$45,481.00 of 1984. Approximately one-third of this budget was set aside for land acquisition. Due to unwilling sellers only one small land purchase was made and the unused monies reverted back to the Nongame Wildlife Fund for future use.

The first new program to be established with checkoff funds was a Peregrine Falcon Release Project in downtown Boston. This project is the Division's first major wildlife restoration effort placed in an urban setting and quickly became the center of frequent media attention. If successful, this restoration project effort will lead to the first breeding pair of peregrine falcons in Massachusetts since 1951.

### Peregrine Falcon Restoration

A release site was constructed on the roof of the federal John McCormack Post Office and Court House Building. On July 17, 1984, six young falcons were placed in their hack box. These birds were released on July 26th. By early September, three of the six had learned to hunt on their own and had left Boston to migrate south for the winter. Of the three that did not disperse, one broke a wing and was returned to the Peregrine Fund in Ithaca, New York as a future breeder, one was killed by an airplane at Hanscom Air Field, and one was killed by flying into a window.

Six young were received on June 7, 1985 for the upcoming Fiscal Year 1986 release.

### Bald Eagle Restoration

Six young birds from Cape Breton, Nova Scotia were placed on the hack tower at Quabbin Reservoir on June 14, 1984. One died unexpectedly of an intestinal infection on July 15th, but the remaining five were released in good health on July 26th.

Eight young birds were received from Nova Scotia on June 21, 1985 for the upcoming Fiscal Year 1986 release.

### Bald Eagle Winter Survey

The survey for the winter of 1984/1985 was conducted on January 11, 1985. A total of 28 bald eagles (15 adults and 13 immatures) was observed statewide. Twenty-one of these (11 adults and 10 immatures) were found at Quabbin Reservoir. During the same survey, three golden eagles were recorded, all at Quabbin.

### Plymouth Red-bellied Turtle

A contract with Dr. Terry Graham of Worcester State College to conduct research on the natural history and management of the Plymouth Red-bellied Turtle was continued.

A "headstart" program was begun by placing 10 hatchlings in the New England Aquarium in November, 1984 and releasing these turtles at a much larger size on June 26, 1985. By keeping these young turtles in a warm climate and feeding them all winter, they grew to a much larger size and were released with a significantly better chance of survival.

### Piping Plover

Over 30 observers reported seeing a total of 131 breeding pairs of Piping Plover at 38 sites. Massachusetts continues to have more breeding pairs of these plovers than any other East Coast state or province. A cooperative study entitled "Management, Habitat Selection and Population Dynamics of Piping Plovers on Outer Cape Cod, Massachusetts" was begun by Ms. Laurie McIvor at the University of Massachusetts, Amherst.



### Tern Inventory and Management

Results of the annual tern census, coordinated by the State Ornithologist, Bradford Blodget, yielded 11,518 breeding pairs in the state. This included 7,548 pairs of Common Tern at 24 sites (up 9% from 1984), 2,338 pairs of Least Tern at 43 sites (slightly less than 1984), 1,618 pairs of Roseate Tern at eight sites (down 11% from 1984), and 14 pairs of Arctic Terns at four sites (the same as 1984). The most notable change was the nearly complete collapse of the Monomoy-North Common Tern colony. In 1985 only 290 pairs remained; down from 3,400 pairs in 1980, and 1,200 pairs in 1984.

### Osprey

This was a record year for nesting osprey. A total of 103 nests were occupied; 88 of them were successful (75%), producing 145 fledged young. Each successful nest produced an average of 2.2 young.

Nest poles were erected for osprey prospecting outside of their current nesting range at Quabbin Reservoir and on Plum Island. The present breeding range includes localities in Barnstable, Bristol, Dukes, Nantucket and Plymouth Counties.

### Common Loon

During 1985, the Nongame and Endangered Species Program, Metropolitan District Commission and Massachusetts Audubon Society, received a joint grant from the North American Loon Fund. This grant made possible the hiring of a Loon Warden to gather data on the status, productivity and causes of disturbance to the Common Loon at Quabbin Reservoir. Six pairs of loons were monitored at Quabbin and one at Wachusett Reservoir. Eggs were laid by three of the Quabbin pairs and one chick was hatched.

### Great Blue Heron Colony Inventory

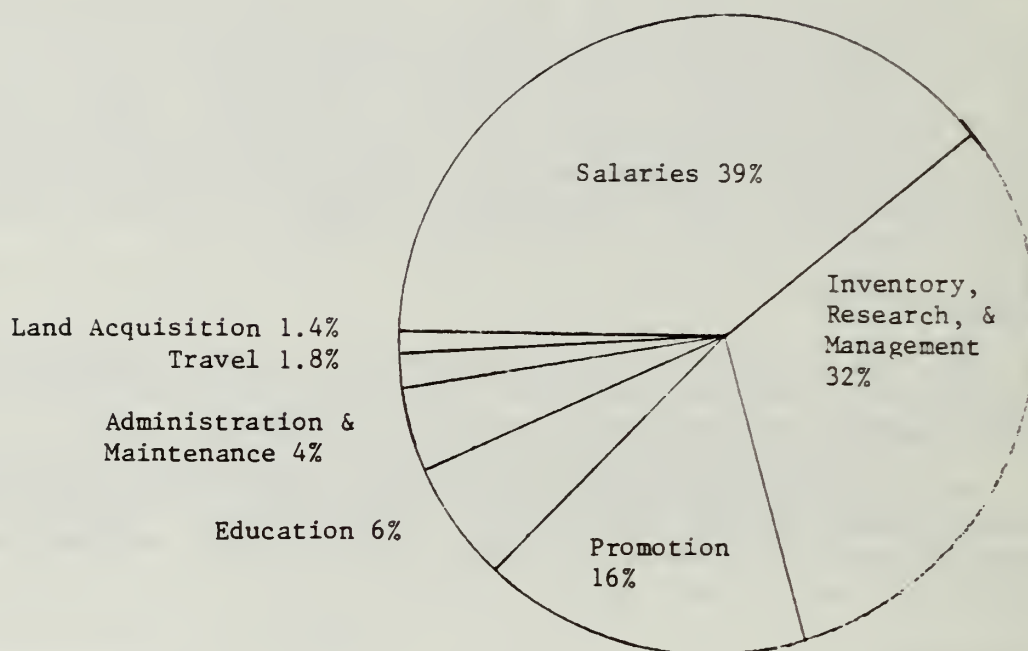
During June 1985, the State Ornithologist conducted an inventory of all known Great Blue Heron colonies in the state. An estimated 308 nesting pairs were counted, continuing the rising trend evident since 1979. These results were up 32% from 1984 and up 61% over 1983. A total of 25 colonies was recorded, of which 15 were located in Worcester County. The largest colonies were in Dunstable (67 pairs) and Phillipston (44). Mean brood size at about 60 days among all colonies was conservatively 2.79 young. Estimated total production was 717 young; up 34% from 1984. Overall results show that the Great Blue Heron continues to flourish in Massachusetts and that productivity and recruitment are excellent.

### Bluebird and Purple Martin Management

During Fiscal Year 1985, approximately 250 bluebird houses were built in Division shops. The Demonstration Bluebird Trail at High Ridge Wildlife Management Area in Gardner and Westminster, begun in 1984, was expanded. This

## NONGAME &amp; ENDANGERED SPECIES PROGRAM

## FY 1985 EXPENDITURES



Salaries	\$ 48,113.
Species Inventory, Research & Mgt.	\$ 39,495.
Promotion	\$ 20,069.
Education	\$ 7,175.
Administration & Maintenance	\$ 4,908.
Travel (including advisory committee)	\$ 2,259.
Land Acquisition	\$ 1,700.
	<hr/>
	\$ 123,722.

trail is being developed to provide the general public with a place they can visit to actually see bluebirds and to show how a trail is built to attract bluebirds. Five pairs of bluebirds nested in boxes along the trail in 1985.

Studies continued in 1985 to determine the efficiency of installing purple martin house units about the state. As of June 30, 1985, units had been installed at 39 sites. Of these units, six were "support" units at existing colonies, 13 were "satellite" units located within 25 miles of existing colonies and 19 were "prospecting" units located more than 25 miles from known colonies. Utilization has been generally poor. "Support" units enjoyed the best success with 75% utilized to some degree, but none of the 19 "prospecting" units was occupied.

Results thus far seem to show that units are useful in augmenting and strengthening existing colonies, but of little use in expanding the species' range. New colony establishment seems to be an extremely slow process that seems to depend on the vagaries of weather and other natural factors, social factors and just plain chance.

Because of the investment in houses already made, units will continue to be monitored for occupancy. However, production of new units has been suspended.

#### Bat Studies

During the winter of 1984-85, Division staff visited the Rowe Copper Mine, the Chester Macia Mine and the Old Chester Mine to survey hibernating bat populations and to search for the endangered Indiana bat, Myotis sodalis. A total of 4,047 hibernating bats of four species were counted but no Indiana bats were found. In order of importance the species included Little Brown Myotis (2,903), Keen's Myotis (585), unidentified Myotis (including Little Brown and Keen's - 521), Eastern Pipistrelle (36), and Big Brown Bat (2).

#### Nongame Fiscal Year 1985 Project Expenditures

##### Species, Inventory, Research and Management

Bald Eagle - Quabbin release program and winter survey (\$10,000 from Bald Eagle Trust Fund)	\$12, 860.
Plymouth Red-bellied Turtle - Research, management and Headstarting program	\$10,527.
Peregrine Falcon - Boston release program	\$ 3,900.
Bats - winter surveys	\$ 429.
Bluebird and Purple Martin house construction	\$ 97.
Rare species inventories - Mass. Natural Heritage Program - including rare plants and animals	\$10,710.

##### Land Acquisition

Great Blue Heron colony - Dunstable, MA	\$ 1,700.
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## District Reports

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Northeast District, Walter L. Hoyt, District Wildlife Manager  
Southeast District, Louis Hambly, District Wildlife Manager  
Central District, G. Christopher Thurlow, District Wildlife Manager  
Connecticut Valley District, Herman Covey, District Wildlife Manager  
Western District, Tom Keefe, District Wildlife Manager

The five wildlife districts are the field units of the Division of Fisheries and Wildlife. They work directly on Division properties and serve as the Division's presence throughout the Commonwealth. Staff from the District offices conduct field research under the supervision of project biologists, conduct stocking programs and serve as liaison with sporting and conservation groups. During Fiscal 1985, personnel from all districts released trout, pheasant, quail in the Southeast District, hare, tiger muskies and northern pike in a variety of woods and waters. They operated stations where hunters checked deer and turkey and where trappers registered the pelts they had taken. They distributed licenses, abstracts and other materials to hunting/fishing license sales outlets and they assisted officers from the Division of Law Enforcement in ensuring public adherence to wildlife regulations. In addition, certain Districts conducted special hunts at the Delaney Wildlife Management Area (Northeast), Otis Air Force Base (Southeast), Ludlow Wildlife Management Area (Conn. Valley) and a special deer hunt for paraplegic sportsmen (Western).

Throughout the year, District staff members participated in on-going research efforts such as the mid-winter eagle survey, black duck banding program, the waterfowl inventory, census of mourning doves and woodcock, survey of great blue heron rookeries, monitoring of the mast crop and checking pH levels of ponds and streams. Special surveys brought Western District crews into the field checking streams and ponds for PCB's to assist the Division of Water Pollution Control and to assist a crew from Field Headquarters in the annual bat inventory. Staff from the Connecticut Valley District became involved

with research teams from the University of Massachusetts conducting research on black bears. Field crews assisted the wood duck research program by monitoring and maintaining wood duck boxes and Central District staff built and maintained houses of bluebirds establishing a demonstration trail on the Gardner Wildlife Management Area.

As usual, District crews were on hand to assist the public in dealing with issues of animal damage. In this context, staff members provided advice, loaned traps and undertook animal removal operations where beaver were obstructing waterways.

District personnel reviewed the Environmental Monitor for projects having an impact on wildlife, and offered comments where appropriate. They also took part in a variety of training sessions on such objects as animal immobilization, lake drawdowns, acid rain and telemetry.

Crews from both Western and Connecticut Valley Districts participated in the turkey translocation program by scouting potential capture sites, baiting such sites and where birds were taken, assisting in transferring them to their new home area. Western District crews also transported, where they were met by a crew from the Southeast District, pheasant eggs donated to Massachusetts by New York State. The Eagle Restoration Program occupied staff of the Connecticut Valley District during the summer as they assisted in site preparation and gathering food for the young birds. During the same period, District staff members worked weekends with volunteer crews from the Western Massachusetts Chapters of Trout Unlimited, Western Massachusetts Fly Fishermen, and the New England Fly Fishermen to improve the upper section of the Swift River. To date, this effort has paid off in the establishment of four wing deflectors made of logs and stone and the placement of 75 halflog fish shelters. The joint effort has drawn much public interest as reflected by positive press coverage. A new initiative in the Valley involves the formation of a Connecticut Valley Action Program Committee made up of representatives of the 19 cities and towns along the Connecticut River and including among its members the Connecticut Valley District Manager. This group has met to identify problems along the river and gather recommendations for action.

Three new osprey nesting platforms were erected in the Southeast District with assistance from District crews. This district also monitored walleyes which are uncommon in the state. Their survey of Assawompsett Pond netted over 100 fish. Eggs were taken from these fish, fertilized and subsequently returned to the pond to test for viability. Preliminary results indicate that the eggs were fertile and viable.

Crews from the Northeast District expanded their management activities to take in the 2,640 acres in eight communities abutting the Charles River (Charles River Natural Valley Storage Area). Management responsibility for this vital area has been transferred to the Division by the U. S. Army Corps of Engineers.

The majority of the time not spent in research projects was spent in maintenance and improving the wildlife management areas within the Districts with each District having management responsibility for 2,700 acres (Connecticut Valley) to 15,200 acres (Central) of wildlife lands. On these areas, District crews cut back brush and opened fields. In one of the largest operations of the year, crews from the Central District opened 50 acres of old fields on the High Ridge Wildlife Management Area in Gardner. In addition to clearing lands, crews planted shrubs and trees as needed, limed and fertilized, marked boundaries, maintained and repaired bridges, roadways and parking areas. In addition, District personnel serviced transport and field equipment, maintained stream and pond shocking gear, boats and a variety of vehicles. District Managers arranged cooperative agreements with local farmers who were permitted to utilize Division lands in exchange for practices which enhance the fertility of the land and for leaving food and cover crops for wildlife. On other lands, contracts were arranged for selective logging to benefit wildlife and to provide material for Division construction projects. In the Western District, a cooperative agreement was signed to permit a maple sugaring operation on a wildlife management area in exchange for woodland improvements selective cutting and a fee.

While the obligations filled most of the District crews' days, all districts reported an increasing number of public contacts. These ranged from providing technical assistance to such groups as the U.S.D.A., University of Massachusetts, U.S. Army Corps of Engineers, Town Selectmen, and other state agencies as well as to private citizens confronted with animal nuisance or damage problems to staffing of booths at shows, exhibits and fairs.

As in the past, District staff continued to attend public meetings on issues related to wildlife, make press contacts, respond to press inquiries and participate in radio and television programs describing or explaining Division programs.





# Information and Education

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Ellie Horwitz  
Chief  
Information and Education

## Press Contacts

Communication with the public through the news media continues to be a key function of the Information and Education Section. At this point, coverage of Division activities is good and the number of direct inquiries from both print and electronic reporters is increasing. Fiscal Year 1985 saw a continuation of the upward trend in coverage and use of press releases that has been noted in the past few years. Calculated on a calendar year basis (figures are for calendar year 1984) the section issued 34 press release packets for a total of 164 press release items. These items were sent to a list of 1,500 recipients of which 356 were media representatives while others included 428 sportsmen's clubs, 351 town clerks and a number of sporting goods stores. These releases plus special press events brought a total of 3,901 press clippings or an average of 325 clippings per month. This shows a continued increase over the previous high level of 240 per month (1983).

Special events for the press were hosted on the occasion of: the arrival of six young bald eagles from Nova Scotia and their subsequent release; the arrival of young peregrines; an official announcement of the results of the nongame checkoff; a volunteer effort to upgrade a portion of the Swift River in Belchertown; the Governor's signing of the annual proclamation of National Hunting and Fishing Day (September) and his signing of a similar announcement proclaiming Acid Rain Awareness Week (April), the establishment of a sanctuary for the protection of the endangered Plymouth Red-bellied turtles; and a special "hot-line" to convey up-to-the-minute information on the progress of the deer hunting season.

In addition to these releases and events, section personnel responded to requests for information from writers, reporters and radio/television journalists. Potential tourists as well as interested citizens also requested information and a sizable fraction of staff time was devoted to responding to both telephone and written inquiries.

### Publications

Many of the inquiries received were answered with Division publications. As is section practice, all annual publications (abstracts, waterfowl regulations, stocking lists, fishing access information and other routine materials) were updated. Popular publications including fishing map booklets, lists of fauna and natural history flyers were reprinted. Prior to reprinting each publication was reviewed and, where needed, updated. Because of the rush to update and revise existing brochures, no new brochures were prepared, however, a new series of information sheets, inaugurated in Fiscal Year 1984, was expanded. This series, produced in cooperation with the U. S. Fish and Wildlife Service and the Cooperative Extension Service, now includes six natural history titles and three leaflets on recognizing and dealing with animal damage. In view of the growing number of publications, the Division's publications list was enlarged and reissued.

During this period, funds were available for only one issue of Massachusetts Wildlife. The single issue was devoted entirely to the issue of acid rain and examined the effects of acid rain on a wide variety of natural resources. As it appears that budget constraints will not permit the Division to expand publication under the current system, it has become top priority to establish a subscription system and staff members worked closely with the Director to stimulate passage of a bill to permit establishment of such a system and to develop procedures for handling subscriptions should such a system be approved.

### Exhibits

As in other years, the Division took part in a variety of shows to increase Division visibility and to bring staff members in contact with the general public. The featured species for the 1984-1985 shows were turkey and trout. As in previous years, Information and Education personnel worked closely with District staff in preparing exhibits for the Eastern States Exposition (Springfield), The Eastern Fishing Exposition (moved from Boxborough to Worcester) and the Springfield Sportsmen's Show (taken on in lieu of the former Boston Travel and Camping Show). District crews used these materials for Regional fairs including Topsfield Fair (Northeast), The Fair in Worcester (Central) -- a show which provided the Division two hours of prime time on WTAG, a major Worcester station, Greenfield Fair (Conn. Valley), and the Bridgewater Sportsmen's Show (Southeast). In addition to these "traditional" shows, the section staff brought a Division presence and exhibit to the annual meeting of the Massachusetts Association of Conservation Commissions and to the New England Environmental Conference.

Hundreds of thousands of visitors passed through these exhibits, purchased licenses, asked questions and became better acquainted with the Division and its activities.

### Shows

All members of the section participated in presenting slide shows, seminars and films as appropriate to both general and technical audiences. While programs dealt with all aspects of Division activities, the prime focus was on the activities of the burgeoning Nongame Program and specifically on eagle restoration. Groups requesting such programs included school groups, civic groups, sportsmen's and garden clubs, senior citizen's groups and an increasing number of groups from neighboring states.

### Photography

During the year, both photographers continued to increase Division files by photographing and documenting field projects and by creating special graphics for presentations by staff administrators and biologists. While no specific films or slide shows were planned, photographs were taken for possible future programs on Division activities and on coastal nesting birds. Special emphasis has been focussed on obtaining photographs appropriate for nongame fund posters and for brochures which are in preparation or have been projected for future publication.

### Special Programs

#### Nongame and Endangered Species Program

Promotion of the Nongame Wildlife Fund and the associated tax checkoff was the key issue for the Information and Education Section during this year. During the first year of this promotion, efforts had been aimed at rapid production of basic publicity materials and the fund had garnered a total of \$338,070.00.

With somewhat more lead time, consultant Joy Merzer compiled a report on first year performance of nongame funds across the nation and determined that Massachusetts came in with returns behind those of only two states, New York and Colorado. Poster and brochure materials were revised, meetings were held with tax preparers, a 30 second television spot was prepared, the slide show was updated and expanded, and appearances were booked for nongame staff members on a wide variety of radio and television shows (average 10/mo. during tax season). Special articles were prepared for the newsletters of wildlife and environmental organizations and for the Department of Law Enforcement's newsletter. A nongame fund segment was included in all Division shows and exhibits and a special exhibit on wetlands was prepared for inclusion in the Boston Flower Show. This exhibit was awarded third place among small exhibits. A variety of staff members, including District staff presented programs focussing on the nongame slide show and on the film Home Free, a 27



minute documentary which chronicles the eagle restoration project. This film was selected by Channel 2 for use in its own fund raising effort and, with Division and Audubon staff responding to donors, became the single greatest fund raising program of the year.

Looking ahead, plans were made for promotion in 1985-86, initial meetings were held with potential consultants at the Halyard Group (an advertising group) and at Communications for Learning (producers of television and visual materials). Some investigations were also initiated to determine companies and groups which match employee contributions as a way to augment fund income.

Following the footsteps of the nongame program, the Department of Public Health successfully established a similar checkoff on the tax form -- this one for organ transplants. Section personnel met with Department of Public Health staff to assist them in setting up their promotional campaign for this fund.

At the close of the fiscal year, consultant Joy Merzer left the program and a search was initiated for a successor with an advertising background.

#### The Freshwater Sportfishing Awards Program

The program continued to grow with 500+ entries in 20 categories which set six new state fishing records. In a move to standardize regulations, participating stations were required to obtain certified scales for future use. This proved no problem and while a few stations dropped the awards program, others were ready to take their place.

#### Tags 'n' Trout

This program was continued as in previous years. This year local sponsors sponsored 488 tagged trout at 18 locations offering anglers a donated prize program with a minimum value of \$8,700.00 and an actual value which considerably higher. A number of sponsors asked to extend the program into fall fishing. This will be considered for the future.

#### Waterfowl Stamp Program

The annual competition was again held at the Peabody Museum in Salem. Fifty-five entries were considered before judges selected a Ruddy Duck carved by Joe Lincoln and painted by Randy Julius.

#### Archery/Primitive Firearms Stamp

This stamp was prepared as a donation to the Division by artist George DiRolf of Shrewsbury whose design involves the point and fletching of an arrow.

#### Massachusetts Junior Conservation Camp

As in the past, the section was heavily involved with the Massachusetts Junior Conservation Camp, which is now an independent entity operated by the Massachusetts Junior Conservation Camp, Inc. Division involvement ranges from



preparation and distribution of publicity, registration of campers, participation on the camp board in an ex-officio capacity, making arrangements for the actual camp session and teaching both fisheries and wildlife sessions.

### Project WILD

After much consideration, the Division committed the necessary funds to become a partner in Project WILD. Following this, an educational coalition was established with the Massachusetts Audubon Society which will co-sponsor the program and assist in its distribution. An advisory committee of educators was established and initial workshops were held, one to train teachers and one to train future facilitators. To aid in publicity, a brochure and a sampler were designed and printed, and articles about the program were prepared for the newsletter of the American Nature Study Society and for the Journal of the Massachusetts Science Teachers Association.

### Wildlife Projects

Section staff members continued their participation in projects outside the information area with photographer Jack Swedberg taking the lead in the Division's eagle restoration program (detailed in the nongame section) with photographer Bill Byrne deeply involved in assisting on the project. Jack was honored for his efforts as Man of the Year by the Eagle Foundation and Home Free was selected as an outstanding Film of the Year by The Wildlife Society. Journalist Peter Mirick coordinated part of the statewide survey of salamanders and continued to serve as consultant on herpetological matters, while section leader Ellie Horwitz continued to participate in survey and inventory of bats.

### Other

Numerous other projects rounded out the section's activities and involved staff members in many facets of Division activities. During this year, the Division Policy was finally completed and readied for final editing and publication. To accompany this document, a "mission statement" was also prepared for Division use.

A storage area was prepared for museum materials, a complete inventory was conducted, and new cases were constructed to increase display space. Intern Michael Picchieri cleaned and restored the museum's bird mounts under the direction of staff from The Worcester Science Center.

Intern Cindy Slocum assisted the section providing art and graphics for brochures and displays from February 1985 through the end of this fiscal year.

Section Chief Horwitz and Journalist Peter Mirick served as awards committee for the Northeast Outdoor Writers Association. Horwitz also served on the Education Committee of The Wildlife Society and as Northeast Liaison for the Association of Conservation Information.



# Realty



Floyd Richardson  
Chief of Wildlife Lands

Funding made available by Chapter 723 MGL opened new horizons for the Realty Section. Unbridled latitude in acquisition endeavors presented the Division with the opportunity to acquire: lands adjacent to existing wildlife management areas; lands adjacent to major rivers; rare, threatened or endangered species habitat; coldwater streams; and other lands determined to be threatened.

The benefits the public will realize from the above-mentioned programs of acquisition will be immeasurable. The majority of lands described herein are lands acquired with this open-space monies.

Phillipston Acquisition Project3,229.5 Acres

This unique management area has provided countless hours of enjoyment to sportsmen and "out-of-doors" enthusiasts alike. Benefits include cross-country skiing on the numerous wooded roads that spider web the area, berry picking where the silence is punctuated only by song birds, and grouse exploding from a thicket when you least expect it.

As the Division entered this fiscal year, the threat of development focused on the western perimeter of this unspoiled area. Three hundred acres and 3,500 feet of Williamsville Road frontage were in danger of being developed. Fortunately, the owner enjoyed wildlife and appreciated wildlife lands. He refused a lucrative offer from a developer and sold to the Division at a considerably lower price.

High Ridge Acquisition Project1,795.7 Acres

A comparatively new management area, High Ridge is maturing into a compatible wildlife area. Additional acquisitions are becoming increasingly difficult because of the proximity of a community developing rapidly both industrially and residentially. The construction and completion of Route 190, a direct route from central Worcester, is the major factor contributing to the increased growth rate.

Despite these pressures, the Division has acquired a twelve (12) acre parcel, lending additional food and wildlife cover adjacent to Smith Street.

Fox Den Acquisition Project748.0 Acres

Two large acquisitions created a new wildlife management area in the Town of Worthington, County of Hampshire. The combination of these two acquisitions place 748 acres of woodlands in Division ownership.

Ownership, which originates on West Street, runs westerly over undulating topography to the Middle Branch of the Westfield River. Hardwood trees -- oak, maple, beech, ash and birch with softwood stands of pine, hemlock and spruce -- comprise the woody plants. Remnants of apple orchards are scattered throughout the area.

This picturesque hilltown has become a popular residential development. Unfortunately, development spells destruction of wildlife habitat, so these acquisitions come at a most opportune time.

Hinsdale Flats Acquisition Project1,219.7 Acres

Seventy-two acres of wildlife habitat were added to this management area which extends from the Washington/Hinsdale town line to the Middlefield Road. The East Branch of the Housatonic River, in its serpentine pattern, graces the area providing habitat for waterfowl, aquatic mammals, and trout.



Birch Hill Acquisition Project3,179.6 Acres

The Division owes a debt of gratitude to the officials of the Town of Winchendon who made this 82 acre acquisition possible. Their concern for the environment coupled with their determination and effort to place this land in public ownership was responsible for these lands being deeded to the Division.

Birch Hill has long been a favorite hunting and fishing area. Open fields, hedgerows, woodlands, and marshlands blend to provide a well-balanced wildlife area. Two well-stocked trout streams complete the area.

Bolton Flats Acquisition Project740.9 Acres

A triangular parcel of woodland, fronting Route 117 in Lancaster, was acquired to add another seven acres to the popular Bolton Flats Management Area.

Land adjacent to this area, potentially available, is relatively scarce and expensive. Future acquisitions are expected to be difficult.

Elbow Meadow Acquisition Project5.0 Acres

This area is considered one of the largest Great Blue Heron rookeries in Massachusetts. Encroaching residential development and the loss of remoteness necessary for this rookery spelled disaster. Concern for the well-being of the rookery precipitated an acquisition plan developed cooperatively with the Dunstable Conservation Commission. The plan to create a protective buffer zone was formulated. An 83-acre parcel was acquired by the town and the Division added a five acre parcel. Funding from the Nongame Income Tax Checkoff proceeds made this first acquisition possible.

Quaboag Acquisition Project1,101.4 Acres

Four new parcels of river front property were placed in Division ownership. These parcels ensure permanent protection of that segment of the Quaboag River. They comprise 55.8 acres and are located both in Brookfield and West Brookfield.

With the above-mentioned acquisitions, approximately five miles of Commonwealth ownership on the river is realized.

North Attleboro Federal Hatchery Project36.46 Acres

Title to a thirty-six and one-half acre parcel of land was vested into the Division. This transaction without cost is considered a transfer resulting from a "reverter clause" in a deed of the Commonwealth to the United States Fish and Wildlife Service.

Language in the deed explicitly instructs and directs the return of any portion of the conveyed premises no longer utilized for propagation of fish. Route 95 cut off a segment of the hatchery. This isolated property is no longer an integral part of the hatchery, thus precipitating the transfer.



# Maintenance and Development

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John P. Sheppard  
Chief  
Maintenance and Development

## Hatcheries

Work was completed on the construction of the wastewater treatment facility at the McLaughlin Hatchery, Belchertown. An existing well was re-developed at the East Sandwich Anadromous Fish Hatchery. A new boiler and oil burner unit were installed at the residence at the Palmer Hatchery and new vinyl siding was installed at the residence at the Sunderland Hatchery. Also a new 8" PVC water line was installed at the Sandwich Hatchery.

## Hunter Safety Building - Gardner, Massachusetts

A new roof was installed at the aforementioned building and extensive renovations were undertaken on the outside of the building including vinyl siding.

## Public Access Projects

- (1) New plantings at the Lake Quinsigamond boat ramp in Shrewsbury.
- (2) Design development started on canoe and cartop boat ramp at North Pond - Hopkinton.
- (3) Concrete slab installed and miscellaneous repairs conducted at Monponsett Pond in Halifax.
- (4) Concrete slab installed and repairs conducted at Big Alum Pond in Sturbridge.



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# Personnel Actions

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Eighteen personnel changes were undertaken during this fiscal year.  
They are:

## Appointments

<u>Name</u>	<u>Job Title</u>	<u>Date</u>
S. Williams	Game Biologist, Westboro	02/24/85
A. Cancellieri	Principal Bookkeeper, Boston	03/10/85
J. Sousa	Assistant Fish Culturist, McLaughlin	04/01/85
J. Scanlon	Junior Planner, Westboro	05/13/85
E. Ramey	Sandwich Game Farm, Sandwich	06/03/85
S. Shea	Senior Bookkeeper, Boston	06/30/85
K. Miller	Senior Clerk, Boston	05/05/85
J. Ayre	Junior Bacteriologist, McLaughlin	09/09/84

Retirements

<u>Name</u>	<u>Job Title</u>	<u>Date</u>
S. Curtis	Conservation Skilled Helper, Southeast	07/15/84
A. Kleinoit	Chief Administrative Clerk, Boston	06/30/84
C. Ellison	Fish Culturist, Bitzer Hatchery	11/02/84
R. Deane	Conservation Skilled Helper, Bitzer	03/31/84
J. McDonough	Game Biologist, Westboro	10/19/84

Resignations

D. Spigarolo	Junior Bacteriologist, McLaughlin	08/01/84
E. Robidoux	Senior Clerk, Boston	04/19/85
D. Rose	Conservation Helper, Western District	04/16/85
P. Sutliff	Senior Bookkeeper, Boston	05/17/85

Transfer

M. Magenghi	Senior Bookkeeper to Junior Clerk Typist on a half-time basis.	03/31/85
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# Legislation

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## Enacted During Fiscal Year 1985

Chapter 77 - Acts of 1985. An act further regulating public access to information in the Massachusetts Natural Heritage Program Data Base.

Chapter 95 - Acts of 1985. An act imposing administrative penalties for certain environmental violations.

Chapter 130 - Acts of 1985. An act authorizing the transfer of the care, custody and control of certain parcels of lands in the Town of Bourne from the Division of Fisheries and Wildlife and the Buzzards Bay Water District to the Department of Public Works for highway purposes.

Chapter 197 - Acts of 1985. An act increasing the penalties for the dumping of rubbish on public land, in or near coastal or inland waters or on the property of another.

Chapter 219 - Acts of 1985. An act allowing for a turkey hunting season in a certain area of the Mount Greylock State Reservation.

Chapter 231 - Acts of 1985. An act relative to the Division of Law Enforcement, Department of Fisheries, Wildlife and Environmental Law Enforcement.

Chapter 254 - Acts of 1985. An act further regulating commercial shooting preserves.

Chapter 329 - Acts of 1985. An act authorizing the shooting of certain wounded migratory game birds from a powered boat.

Chapter 349 - Acts of 1985. An act further regulating the carrying of dangerous weapons.

Chapter 435 - Acts of 1985. An act authorizing the Towns of Dracut and Tyngsboro to enter into an agreement with the Town of Pelham in the State of New Hampshire for the purpose of watershed management and lake restoration for Long Pond.

Chapter 483 - Acts of 1985. An act authorizing the reproduction of the Fuertes Bird Paintings.

Chapter 528 - Acts of 1985. An act authorizing DCPO to permit the General Electric Company to transfer certain easements in land of the Commonwealth.

Chapter 573 - Acts of 1985. An act relative to certain capital outlays. (Section 12 amends land acquisition bill by obligating the general fund rather than the Division of Fisheries and Wildlife).

Chapter 590 - Acts of 1985. An act limiting acid rain and acid disposition.

Chapter 630 - Acts of 1985. An act relative to fees for issuing hunting and fishing licenses (clarifies section 17 of Chapter 131).

Chapter 734 - Acts of 1985. An act relative to the Quabbin Watershed Advisory Committee of the MDC.

Chapter 756 - Acts of 1985. An act establishing the Lake Buel Restoration/Preservation District in the Towns of Monterey and New Marlborough.

Chapter 767 - Acts of 1985. An act relative to certain dams.

Chapter 770 - Acts of 1985. An act authorizing use of the Division of Fisheries and Wildlife Nongame Wildlife Fund to acquire other than fee interests in certain property.



# How the Sportsman's Dollar is Spent

COMMONWEALTH OF MASSACHUSETTS  
DIVISION OF FISHERIES AND WILDLIFE  
July 1, 1984 to June 30, 1985

	Account No.	Expenditures		Percent- age
<u>Administration</u>				
Administration	2310-0200	\$ 494,263.75		
Information-Education	2310-0200	243,443.34	\$ 737,707.09	13.03%
<u>Wildlife Programs</u>				
Game Farms	2310-0400	673,795.73		
Wildlife Management**	2310-0400	762,789.83		
Wildlife Cooperative Unit	2310-0400	72,000.00	1,508,585.56	26.64%
<u>Fisheries Programs</u>				
Fish Hatcheries	2310-0400	847,886.66		
Fisheries Management**	2310-0400	650,273.82		
Fisheries Cooperative Unit	2310-0400	72,000.00	1,570,160.48	27.72%
<u>Construction</u>				
Development & Improvement of Facilities for Public Use*	2310-0300		82,079.15	1.45%
<u>Land Acquisition</u>				
Acq. of Upland Areas & Inhold- ing on Existing Areas* **	2310-0310		171,366.06	3.03%
<u>Equipment</u>				
Purchase of Equipment	2310-0315		187,742.25	3.31%
<u>Dept. of Fisheries, Wildlife &amp; Recreational Vehicles</u>				
Natural Resource Officers'				
Salaries and Expenses (15%)	2350-0100		330,875.52	5.84%
Hunter Safety Training***	2350-0101		182,524.75	3.22%
<u>Transfers from Fund</u>				
Group Insurance	1590-1007		218,294.00	3.85%
Salary Adjustments	2310-7001		64,467.00	1.14%
Central Reproduction			1,063.74	.02%
<u>Retirement Assessment (.2%)</u>	0612-1000		381,091.82	6.73%
<u>Interest on Bonded Debt</u>	0699-2800		33,231.50	.59%
<u>Maturing Serial Bonds &amp; Notes</u>	0699-2900		194,000.00	3.43%
TOTAL EXPENDITURES			\$5,663,188.92	100.00%

\* Continuing Appropriation

\*\* Portions of expenditures up to 75% reimbursable by Federal Government

\*\*\* 100% reimbursable by Federal Government

APPROPRIATIONS AND EXPENDITURES  
Fiscal Year July 1, 1984 to June 30, 1985

Inland Fish and Game Fund Accounts

<u>Account No.</u>	<u>Appropriations</u>	<u>Expenditures &amp; Liabilities</u>	<u>Total Reversions</u>
2310-0200 Administration	787,193.00	737,707.09	49,485.91
2310-0315 Purchase of Equipment	271,713.00	187,742.25	83,970.75
2310-0400 Wildlife Management	3,300,085.00	3,078,746.04	221,338.96
	4,358,991.00	4,004,195.38	354,795.62

	<u>Continuing Appropriations</u>	<u>Expenditures</u>	<u>Balance Forward</u>
2310-0300 Dev. & Imp. of Facilities for Public Use	138,417.10	82,079.15	56,337.95
2310-0310* Acq. of Upland Areas & In- holding on Existing Areas	268,687.09	131,503.70	137,183.39
	407,104.19	213,582.85	193,521.34

	<u>Capital Outlay Appropriation</u>	<u>Expenditures</u>	<u>Balance Forward</u>
2670-9016 Acq. of Coastal & Inland Wetlands	5,545.49	1,604.50	3,940.99

General Fund Accounts

<u>Account No.</u>	<u>Appropriations</u>	<u>Expenditures &amp; Liabilities</u>	<u>Total Reversions</u>
2310-0500 Natural Heritage & Greenway Planning	185,000.00	161,363.29	23,636.71
2310-0550 Acid Rain Program	333,000.00	325,874.00	7,126.00
2310-0551 Acid Rain Research	86,500.00	7,500.00	79,000.00
	604,500.00	494,737.29	109,762.71

	<u>Continuing Appropriation</u>	<u>Expenditures</u>	<u>Balance Forward</u>
2310-0310* Acq. of Upland Areas & In- holding on Existing Areas	89,562.36	43,834.57	45,727.79

	<u>Capital Outlay Appropriations</u>	<u>Expenditures</u>	<u>Balance Forward</u>
2310-8821 Wastewater Treatment Facility, McLaugh. Hatch.	728,192.77	491,470.55	236,722.22
2310-8840 Acq. of Cold Water Streams	3,760,000.00	-	3,760,000.00
2310-8841 Associated Costs	240,000.00	-	240,000.00
2310-8842 Acq. Adjacent to Existing Wildlife Mgmt. Areas	7,050,000.00	-	7,050,000.00
2310-8843 Associated Costs	450,000.00	-	450,000.00
	12,228,192.77	491,470.55	11,736,722.22

Nongame Wildlife Fund Account

	<u>Appropriation</u>	<u>Expenditures &amp; Liabilities</u>	<u>Total Reversions</u>
2315-0100 Nongame Program	298,207.00	192,159.14	106,047.86

Trust Fund Account

	<u>Appropriation</u>	<u>Expenditures</u>	<u>Balance Forward</u>
2310-6004 Bald Eagle Trust	9,443.93	4,997.94	4,445.99

\*75% Inland Fish and Game Fund; 25% General Fund.

SUMMARY OF REVENUE CREDITED  
TO THE  
INLAND FISH AND GAME FUND  
July 1, 1984 to June 30, 1985

<u>Collected by Agency:</u>	<u>Receipt Acct. No.</u>	<u>Amount</u>
Fishing, Hunting and Trapping Licenses*	3304-61-01-40	\$3,923,552.98
Archery Stamps*	3304-61-01-40	111,262.60
Trap Registrations*	3304-61-01-40	1,374.00
Waterfowl Stamps*	3304-40-01-40	6,093.60
Waterfowl Stamps-Ducks Unlimited*	3304-40-02-40	19,490.40
Special Licenses, Tags & Posters**		17,126.00
Antlerless Deer Permits	3304-61-14-40	39,104.00
Bear Permits	3304-61-14-40	4,390.00
Turkey Permits	3304-61-14-40	25,150.10
Rents	3304-63-01-40	18,173.95
Sales, Other	3304-64-99-40	28,778.96
Refunds Prior Year	3304-69-01-40	3,248.46
Miscellaneous Income	3304-69-99-40	455.61
		<u>\$4,198,200.66</u>
 <u>Collected by State Treasurer:</u>		
Fines and Penalties	3308-41-01-40	34,111.85
Interest and Discount on Revenue	3395-60-01-40	101,156.18
		<u>\$135,268.03</u>
 <u>Federal Aid Reimbursement:</u>		
Pittman-Robertson	3304-67-01-40	650,865.86
Dingell-Johnson	3304-67-02-40	305,370.44
Anadromous Fish Projects	3304-67-04-40	15,113.74
Endangered Species	3304-67-11-40	6,916.67
Indirect Cost Reimbursement	3304-67-67-40	326,835.61
		<u>\$1,305,102.32</u>
 <u>Taxes:</u>		
Gasoline Tax Apportionment	3312-05-01-40	385,121.52
 <u>Transfers from General Fund</u>		
Salary Adjustments	3360-95-02-36	65,531.00
Reimbursements on Half Price Licenses	3360-95-08-40	69,491.75
		<u>\$135,022.75</u>
 <u>Reversions</u>		
Accounts Payable		<u>88,951.40</u>
 TOTAL REVENUE		 <u>\$6,247,666.68</u>

DIVISION OF FISHERIES AND WILDLIFE  
 RECEIPTS FROM FISHING, HUNTING AND TRAPPING LICENSES  
 Fiscal Year July 1, 1984 to June 30, 1985

Detail Sheet #1

Class & Type of License	Unit Price	Quantity	Gross Amount	Fees Retained by City/Town Clerks	Net Returned to Commonwealth
01 Res. Cit. Fishing	12.50	146,188	1,827,350.00	44,349.00	1,783,001.00
02 Res. Cit. Hunting	12.50	46,287	578,587.50	17,190.00	561,397.50
03 Res. Cit. Sporting	19.50	60,266	1,175,187.00	20,613.00	1,154,574.00
04 Res. Cit. Minor Fishing	6.50	8,442	54,873.00	2,902.00	51,971.00
05 Res. Alien Fishing	14.50	1,344	19,488.00	464.00	19,024.00
06 Non-Res. Cit./Alien Fishing (7da.)	17.50	6,457	112,997.50	1,946.00	111,051.50
07 Non-Res. Cit./Alien Fishing	11.50	2,577	29,635.50	721.50	28,914.00
08 Non-Res. Cit./Alien Hunting (Small Game)	23.50	1,150	27,025.00	448.00	26,577.00
09 Non-Res. Cit./Alien C.S.P. (3 da.)	19.50	15	292.50	5.00	287.50
10 Res. Cit. Minor Trapping	8.50	149	1,266.50	59.50	1,207.00
11 Res. Cit. Trapping	20.50	881	18,060.50	372.00	17,688.50
12 Duplicates	2.00	3,622	7,244.00	-	7,244.00
13 Res. Alien Hunting	19.50	1,131	22,054.50	472.00	21,582.50
14 Non-Res. Cit./Alien Hunting (Big Game)	48.50	1,260	61,110.00	488.00	60,622.00
15 Res. Cit. Sporting (Over 70)	FREE	20,863			
16 Res. Cit. Fishing (Blind-Para.-Ment. Ret.)	FREE	1,396			
17 Res. Cit. Hunting (Paraplegic)	FREE	172			
18 Res. Cit. Fishing (Age 65-69)	6.25	6,435	40,218.75	2,816.00	37,402.75
19 Res. Cit. Hunting (Age 65-69)	6.25	694	4,337.50	317.00	4,020.50
20 Res. Cit. Sporting (Age 65-69)	9.75	2,966	28,918.50	1,301.50	27,617.00
21 Res. Cit. Trapping (age 65-69)	10.25	54	553.50	23.50	530.00
24 Non-Res. Trapping	300.00	2	600.00	-	600.00
22 Archery/Primitive Firearms Stamps	5.10	312,351	4,009,799.75	94,488.00	3,915,311.75
*Trap Registrations		22,131	112,868.10	1,605.50	111,262.60
Collections on Delinquent Accounts			1,374.00	-	1,374.00
June remittance overages refunded in subsequent fiscal year			4,564.35	-	4,564.35
Robbery-Town Clerk's Office				-	
			4,010.00	-	4,010.00
			-333.12	-	-333.12
23 Waterfowl Stamps	1.25	334,482	4,132,283.08	96,093.50	4,036,189.58
Waterfowl Stamps (Collectors)		23,585	29,481.25	4,726.75	24,754.50
		358,067	4,162,593.83	-	829.50
				100,820.25	4,061,773.58

\*Trap Registrations:  
 Initials 58 @ \$4.00 232.00  
 Renewals 458 @ \$3.00 1,140.00  
 Duplicate 1 @ \$2.00 2.00



SPECIAL LICENSES, TAGS AND POSTERSJuly 1, 1984 to June 30, 1985

<u>Receipt Account</u>	<u>Type of License</u>	<u>Quantity &amp; Unit Price</u>	<u>Amount</u>	<u>Receipt Account Total</u>
3304-61-02-40	Fur Buyers			
	Resident Citizens:	23 @ 25.00	575.00	
	Non-Residents or Aliens:	4 @ 75.00	300.00	875.00
3304-61-03-40	Taxidermists	77 @ 20.00		1,540.00
3304-61-04-40	Propagators			
	Special Purpose Permits:	209 @ 1.00	209.00	
	Class 1 (Fish)			
	Initials:	39 @ 15.00	585.00	
	Renewals:	163 @ 10.00	1,630.00	
	Class 3 (Fish)			
	Initials:	18 @ 15.00	270.00	
	Renewals:	78 @ 10.00	780.00	
	Class 4 (Birds, Reptiles, Mammals)			
	Initials:	56 @ 15.00	840.00	
	Renewals:	371 @ 10.00	3,710.00	
	Class 6 (Dealers)			
	Initials:	15 @ 15.00	225.00	
	Renewals:	52 @ 10.00	520.00	
	Additional Stores:	214 @ 5.00	1,070.00	
	Class 7 (Individual Bird or Mammal)			
	Initials:	1 @ 5.00	5.00	
	Renewals:	13 @ 2.00	26.00	
	Importation Permits			
	Fish:	3 @ 7.50	22.50	
	Birds:	65 @ 7.50	487.50	
	Class 9 (Falconry)			
	Masters:	14 @ 25.00	350.00	
	Apprentices:	25 @ 25.00	625.00	
	General:	14 @ 25.00	350.00	
	Class 10 (Falconry)			
	Raptor Breeding:	10 @ 10.00	100.00	
	Class 11 (Falconry)			
	Raptor Salvage:	22 @ 1.00	22.00	11,827.00
3304-61-05-40	Take Shiners	99 @ 10.00		990.00
3304-61-06-40	Field Trial Licenses	38 @ 15.00		570.00
3304-61-07-40	Taking of Eels	4 @ 25.00		100.00
3304-61-08-40	Quail for Training Dogs			
	Initials:	3 @ 7.50	22.50	
	Renewals:	13 @ 5.00	65.00	87.50
3304-61-10-40	Comm. Shooting Preserves	6 @ 50.00		300.00
3304-61-12-40	Mounting Permits	3 @ 2.00		6.00
3304-61-13-40	Special Field Trial Permits	12 @ 15.00		180.00
3304-64-01-40	Tags and Posters			
	Game Tags:	3,905 @ .10	390.50	
	Fish Tags:	5,200 @ .05	260.00	
	Posters	-	-	650.50
				<u>17,126.00</u>

Fiscal Year July 1, 1984 to June 30, 1985

CHANGES IN  
INLAND FISH AND GAME FUND BALANCE

Balance July 1, 1984 (Surplus)	\$ 281,639.85
Total Revenue/Credits	6,247,666.68
Total Expenditures	-5,663,188.92
*Increase in Continuing Accounts Brought Forward	-104,908.18
Balance June 30, 1984 (Surplus)	\$ 761,209.43

<u>Continuing Accounts Brought Forward</u>	<u>1984</u>	<u>1985</u>
Retirement Assessment (0612-1000)	\$24,028.29	\$ -5,383.53
Develop & Improve Facilities for Public Use (2310-0300)	57,236.07	39,454.22
Acq. of Upland Areas and Inholding on Existing Areas (2310-0310)	1,665.27	133,390.08
Reserve for Encumbrances	.75	20,377.79
	<u>\$82,930.38</u>	<u>\$187,838.56</u>

1985: \$187,838.56

1984: -82,930.38

\*\$104,908.18

CHANGES IN  
NONGAME WILDLIFE FUND BALANCE

Balance July 1, 1984 (Surplus)	\$338,070.46
Total Revenue/Credits	264,642.89
Total Expenditures	-192,159.14
Balance on June 30, 1985	\$410,554.21